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8 January 1962

MEMORANDUM FOR: Mr. Eugene Kiefer, SA/TA/DPD

SUBJECT: Proposed Flight Recorder for the OXCART Program

1. In past and present reconnaissance collection programs, the parameters necessary for qualitative exploitation of photography, including the elements of orientation of the camera station, geodetic position, altitude and velocity, have been determined by graphical means, numerical algorithms, and often by assumption.
2. The potential capability of the OXCART program indicates that the missions will be scheduled for targets of high priority requiring technical intelligence exploitation. Pioneer coverage will probably continue to be provided by satellites. Technical intelligence exploitation will levy rigid requirements of accuracy and completeness of the requisite technical flight data.
3. An Inertial Navigation System provides a capability never before available in that all the orientation, time, altitude and position parameters are sensed and can be recorded. INS, possibly coupled with stellar or solar sensing, will, in all probability, be the way of the future in both cartographic and reconnaissance systems.
4. A few of the advantages for photographic exploitation of a flight recorder coupled to an INS are listed:
 - a. high accuracy.
 - b. high speed.
 - c. saving of man hours.
 - d. provision of some data available in no other way.
 - e. availability of a real-time computing capability from the beginning of the immediate reporting phase precluding the necessity of updating quantitative data initially provided by assumption of many parameters.
 - f. of use to operations for vehicle/mission evaluation.
5. NPIC is developing a real-time computer system around the Remington-Rand Univac 490 computer. This computer has the capability of storing all the technical parameters requisite for quantitative exploitation and the

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real-time system can only work efficiently if these technical parameters are stored in the computer memory prior to the reporting phase.

6. NPIC believes the proposed flight recorder for the OXCART program is necessary for the expeditious utilization of OXCART photography and would favorably consider funding some portion of the costs.

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A. C. LISDAHL
Director
National Photographic Interpretation Center

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